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December 2003

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## Recommended Citation

Xu, Bo and Yadav, Surya, "Effects of Online Reputation Service in Electronic Markets: A Trust-Based Empirical Study" (2003).  
*AMCIS 2003 Proceedings*. 52.  
<http://aisel.aisnet.org/amcis2003/52>

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# EFFECTS OF ONLINE REPUTATION SERVICE IN ELECTRONIC MARKETS: A TRUST-BASED EMPIRICAL STUDY

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## Abstract

*Web-mediated consumer-to-consumer auctions are often regarded as risky due to the opportunistic behaviors in transaction. Online virtual community using feedback-based reputation service is an emerging trust building technology to reduce risk in online auction market. The purpose of this paper is to study the effect of feedback profiles on buyer's purchase behavior. Based on previous researches, a trust-based model is developed to study the relationships among online reputation, trust, risk perception and intention. The model considers both similarities and differences between online and traditional market, it is expected to be a more effective basis for investigation of online consumer behavior.*

**Keywords:** Virtual community, reputation, consumer behavior, trust

## Introduction

In the past several years, due to development of technology online business activities have increased rapidly, market exchanges now can be done in ways that were not possible before, people can do commercial activities without meeting the trading partners. And particularly, customer-to-customer (C2C) online auction has turned every Internet user to a potential trader. The electronic market brings people together virtually from all over the world and opens up new business opportunities, it attracts more and more people into online exchange for its benefits of efficiency and convenience. Today, eBay, the largest online auction site, has more than four million auctions active at a time. And the trading amount in online auction market has increased exponentially in last years.

Although growing quickly, online trade is regarded as risky because of its impersonal nature. Trading parties may never met before, and traders have little knowledge about the identity of trading partners and the real condition of product quality. Cheating, or fraud, is a serious problem to be resolved in online market, according to reported cases, some traders received products of inferior quality; others paid money, but didn't get the ordered products at all. Fraud.org (January, 2001) showed that nearly 41% of online auction participants in the US, or 15.6 million of them, have encountered fraud problems.

A type of services, online virtual community, is emerging to mitigate risk. The most famous community today is eBay's Feedback Forum, which provides information on sellers' reputation, based on feedbacks from previous trades. After each trade, the buyer provides feedback, either positive or negative, on the seller's performance in this trade. The feedbacks cumulate in the forum, and form the sellers' reputation in the online market. Traders having high reputation may enjoy much advantage, e.g. price premium, in online market competition; and fraud activity will be punished by consequence of reputation deterioration from negative feedback. So such community reduces risk by encouraging traders maintain good reputation through honest performance.

It's widely admitted that the emerging online virtual community facilitates trust building between online sellers and buyers. However, there has been no systematic study as to how online reputation affects buyer's purchase behavior and how price premium come from high reputation. This research integrates outcomes of some previous researches, which focus on consumer behavior in traditional physical market, and considers the characteristics of online business to construct a conceptual model that helps investigate online traders' purchase behavior. This research draws upon knowledge and theoretical perspectives from several

disciplines, including management information systems, marketing, psychology, and economics. The paper presents the research model and explains some of the rationale behind the model.

## Conceptual Model

Figure 1 shows the online behavior model. It includes factors that can influence buyers' purchase intention. Two types of factors are incorporated in the model, one is related to the product, the other is related to the seller. Online buyer's intention is determined by his perception of product value and risk of transaction, which are antecedent by his perception of product characteristics (quality, price) and seller characteristics (reputation).

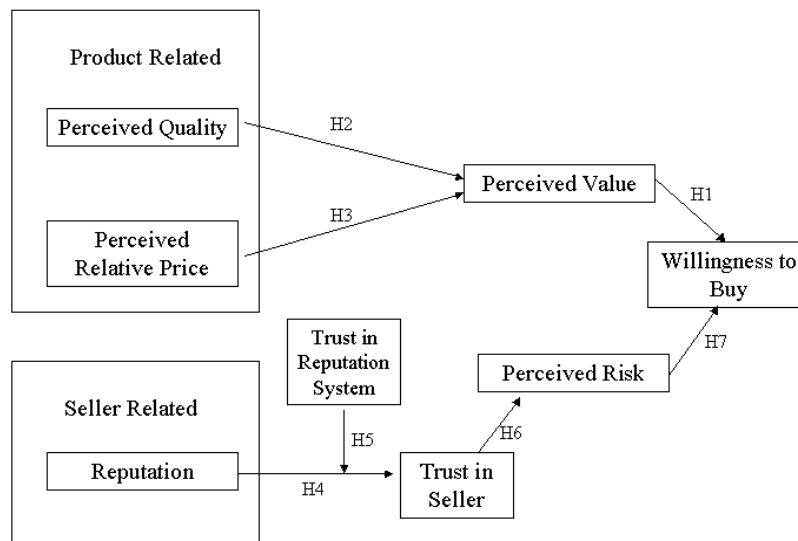


Figure 1. A Research Model of Online Purchase Behavior

### Perceived Value

Many researches have been conducted to understand consumers' behavior in conventional physical market, and most of them focus on value of product. Zeithaml (1988) proposed the model which explains consumers' purchase decision through perceived product value, and this model has become the most common basis for previous research on consumer behavior. Zeithaml (1988) describes values in terms of a tradeoff of salient 'give' and 'get' components. This can be described as a cognitive or rational model of decision making. It considers perceived values as "the customer's assessment of the utility of a product based on perceptions of what is received and what is given." This is similar in concept to Bilkey's (1953; 1955) utility model that takes into account both positive (perceived return) and negative valences (perceived risk). According to the traditional model, we assume the effects of perceived value in online trade and get the following hypothesis:

**H1:** Online buyer's perception of product value has positive effect on willingness-to-buy.

### Perceived Quality and Perceived Relative Price

Several empirical studies explored the antecedents of perceived value. Monroe (1990) regarded perceived value as antecedent to a person's willingness-to-buy and as an outcome of perceived product quality and perceived sacrifice. He also viewed sacrifice as influenced by perceived price. The study of Dodds, Monroe and Grewal (1991) found that price had a negative effect on product's value for money, and perceived quality had a significant effect on perceived value.

Perceived quality is defined as the consumer's judgment about the superiority or excellence of a product, it is different from objective quality, which arguably may not exist because all quality is perceived by someone (Dodds and Monroe, 1984; Garvin 1983; Parasuraman, Zeithaml and Berry, 1985). However, perceived quality is the outcome of specific intrinsic and extrinsic attributes of the product.

From the consumer's perspective, price is what is given up or sacrificed to obtain a product. A growing body of research supports the distinction between objective and perceived price (Allen, Harrell and Hutt, 1976; Gabor and Granger 1961). Studies reveal that consumers do not always know or remember actual prices of products. Instead, they encode prices in ways that are meaningful to them (Dickson and Sawyer 1985; Zeithaml 1982, 1983). Perceived price is often defined as the consumer's perception of the product's price compared to other products with similar specifications, and it is measured by comparing the price of the good to other goods with equivalent features.

**H2:** Perceived quality has positive effect on perceived value, the higher the perceived quality of a product, the higher the perceived value of the product;

**H3:** Perceived price has negative effect on perceived value, the higher the perceived price of a product, the lower the perceived value of the product.

### ***Reputation, Trust and Perceived Risk***

Online market is different from conventional marketplace, in which trading parties may have face-to-face personal contact, and buyers may see products physically. Online market has inherent risk due to the spatial and temporal separation caused by media (Brynjolfsson and Smith, 2000), and it's characterized by information asymmetry (Choi, Stahl and Whinston 1977), which means that trading parties do not have same amount of information about the product (Akerlof 1970). In addition, currently online trades are anonymous, it's difficult to know the real identity of the trading partner. Information asymmetry and anonymity give rise to such opportunistic behaviors as cheating, which is to seek self-interest with guile (Williamson 1975, 1985). Cheating, or fraud, is a serious problem to be solved in online market, according to reported cases, some traders received products of inferior quality; other paid money, but didn't get the ordered products at all. Today, although governments are making the legal systems to protect online business, the legislation process falls far behind growth of electronic commerce (Klang 2001). So, online trade is generally regarded as risky. Trust is a crucial factor in risky situations (Kee and Knox, 1970), and to trust essentially means to take the risk and leave oneself vulnerable to the actions of trusted others (Hosmer 1995). Trust has been considered even more critical in online transaction than in traditional market exchange because of the impersonal nature of online trade (Ba 1999; Swan and Nolan, 1985), and an individual will only engage in a transaction if he believes the transaction is trustworthy enough (Castelfranchi and Falcone, 1998).

Some researches have been conducted on the trust between online trading parties. Researches suggest there are three sources of trust between trading parties in business relationship: familiarity, calculativeness, and values (Coleman 1990; Williamson 1993). Familiarity through repeated interaction is not possible in most online transactions; Institutional rules are not well-developed for the online environment (Fung and Lee, 1999; Klang 2001). So currently the most practical trust source is calculativeness: trading parties estimate the trustworthiness of each other through calculation based on the other party's past performance, which is reflected by reputation. Resnick et al (2000) indicated that reputation system based on feedback may facilitate trust building between online buyer and seller. Ba (2001) proposed online virtual community through feedback-based reputation system to help build trust between trading parties, and the effect of reputation on bidding price and price premium has also been tested empirically.

Reputation is valuable asset to traders, and traders with a good reputation are perceived to be reluctant to jeopardize their reputational assets by acting opportunistically (Chiles and McMackin, 1996). It is found that a seller's high reputation results in high trust in the seller (Ganesan 1994; Anderson and Weiz, 1989).

**H4:** A trader's trust in a seller is positively related to the seller's online reputation score.

Trust through online reputation system is a type of transference based trust, in the online virtual community, traders use the reputation system's definition of another as basis for defining that other as trustworthy (Ba 2001). Here the reputation system is a trusted third party that plays the role of intermediary between trading parties, a trader trust the other party because he trusts the mechanism provided by the third party (Kramer 1999). It is noteworthy that the current feedback systems have some

limitations, first, the reputation reflects past behavior, and it only matters if a trader transacts repeatedly, so if a player adopts a fly-by-night strategy, cheats without coming back to the market, then the reputation left behind does not matter more; second, online trades are anonymous and people can change their identity easily, so if a person uses the strategy of cheating and changing identity, then the reputation based on past behavior does not have any relationship with his credibility in current transaction; third, current feedback systems do not have effective controls to prevent fraudulent feedbacks. So, with these limitations, does every trader think the reputation systems reliable enough? Trust in the reputation system may affect the relationship between a party's reputation and others' trust in the party.

**H5:** Trader's trust in online reputation system affects the relationship between reputation and trust, higher trust in the reputation system will cause stronger relationship between reputation score and trust in the seller.

Trust and risk are closely interrelated (Mayer, Davis and Schoorman 1995), trust can be summarized as the particular level of subjective probability with which a person assesses another person will perform a particular action (Gambetta 1990; McKnight and Chervany, 2000). Stewart et al. (2001) defined trust in e-commerce as the subjective probability with which consumers believe that a particular online transaction will occur in a manner consistent with their confident expectations. So trust in a seller mitigates the buyer's perception of risks involved in the purchase situation (Jarvenpaa et al. 1999), which implies the buyer may perceive low risk in trading with the seller.

**H6:** Higher trust towards a seller will reduce the perceived risks associated with buying from the seller.

According to the theory of planned behavior (Ajzen 1985, 1991), perceived behavioral control affects person's intention. The perceived risk associated with buying from the seller may reduce the buyer's perception of behavioral control, and might negatively influence willingness to buy.

**H7:** Reduced perceived risks associated with buying from a seller will increase a buyer's willingness to buy from the seller.

Peter and Tarpey (1975) identified three broad, strategy-based consumer decision-making frameworks. The first is a perceived risk framework that characterizes the consumer as motivated to minimize the expected negative consequences, or utilities, of a purchase. The second is an attitude framework that is oriented to positive evaluations. The third is a valence framework. The last assumes that consumers perceive a product as having both positive and negative attributes. Consumers act to maximize the overall or 'net' valence resulting from negative and positive attributes of an act. The so-called net valence, additive utility model is the arithmetic difference between the positive valences and negative valences. Peter and Tarpey (1975) found the third framework to be superior in explaining product preference, it takes into account both positive and negative expectations, and the explained variance in product preference was, on average, twice as much as either of the other models. The construct of the research model fits into this net valence framework.

## **Proposed Research Methodology**

An experiential survey approach will be used to collect data from a group of undergraduate or graduate students. The data collection procedure is suggested to include following steps:

- A lecture about online auction and feedback based online reputation system is offered to the participants;
- Participants are asked to visit an online auction website (e.g. [www.ebay.com](http://www.ebay.com)) to learn how to actually purchase online, but they are not required to complete a transaction nor provide any monetary information, since the goal is to familiarize the participants with online transaction process and the reputation system;
- Then the participants are asked to answer a questionnaire. The questionnaire presents ten different transaction cases with computers as targeted goods for sale, by varying the product quality specifications (brand, year, configuration), feedback profiles and bidding prices. The feedback profiles are shown with positive and negative ratings in a format similar to the well-established Feedback Forum of eBay. For each case, participants answer some questions which measure their perception of product quality, price and value, perception of seller reputation and risk, trust and intention.

Scales to measure each of the constructs defined in the model will be developed based on previous literature and using existing scales where possible. In particular, perceived price is measured with the two items derived from Conover (1986) that compared the price of the good to other brands with equivalent features; product quality and perceived value are measured using Dodds,

Monroe and Grewal's (1991) scales; measures of intention are based on the suggestions of Fishbein and Ajzen (1975); measures of trust and perceived risk are adapted from Jarvenpaa et al (1999).

The proposed research model will be tested using data collected from surveys. Two rounds of surveys will be conducted, pilot data from first round will be used to validate the measures and scales, data from second round of survey are analyzed to test the hypotheses.

## **Conclusion**

In this research-in-progress paper we have outlined a research model to help investigate effects of online reputation on consumer's behavior in online auction market. This model is useful to understand online buyer's decision-making process, and it also helps to explain some phenomena in online transaction, for example, preference and price premium enjoyed by sellers with good reputation. The model is under further development by incorporating other cognitive, social and psychological factors.

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